

CLAIMS

1. Inhaler device (1) for dispensing a medicament from a pressurised canister (6), where said device comprises a mouthpiece (5) arranged in a housing (2), where said housing (2) substantially encloses the canister (6), where a lever arm (8,77) is provided, where said lever arm (8,77) comprises means (16) for engaging the bottom of the canister (6) such that said lever arm (8,77) may be activated by a user in order to dispense a dose, characterised in that the lever arm (8,77) further engages a yoke (15,79) where the transfer of movement from said lever arm (8,77) due to the activation of said lever arm to the yoke (15,79) is linear and/or non-linear, and that the yoke (15,79) comprises means (44,80) for transferring the movement to a dose counting mechanism arranged in the housing.
2. Inhaler device according to claim 1, characterised in that the movement of the canister (6) caused by said lever arm (8,77) in order to dispense a dose is shorter than the corresponding movement of said yoke (15,79).
3. Inhaler device for dispensing a medicament from a pressurised canister (6), where said canister (6) comprises a bottom and a top, and that a valve mechanism (7) is provided in the top of said canister (6) for dispensing a medicament and that in use the canister is placed with the top downwards proximate a mouthpiece (5), where the device comprises a mouthpiece (5) and a means for guiding and/or holding the canister, and a lever arm (8,77) comprising means (16) for engagement with the bottom end of the canister (6), such that the canister (6) is not accessible from the outside, and further that a seat for engagement with the top of the canister (6) is provided inside the housing (2), and a cap (3) is pivotally arranged such that the cap (3) can be pivoted into a closed position where it covers the mouthpiece (5) and an open position where the mouthpiece (5) is accessible, and that said cap (3) further comprises means (17) for abutting the top of the canister (6) and/or for abutting the means (15,16,79) for engagement with the bottom end of the canister (6) when the cap (3) is in its closed position such that the canister (6) cannot be activated accidentally.

4. Device according to claim 3, c h a r a c t e r i s e d in that the means (16) for engagement with the bottom of the canister comprises a yoke (15) which yoke has a canister engagement section (16) optionally having a shape corresponding to the bottom of the canister (6), and an end section, which when the cap (3) is in its closed position
5 engages a cam (17) provided on the cap (3), such that the engagement section (16) of the yoke (15) is not in contact with the canister (6).

5. Device according to claim 3, c h a r a c t e r i s e d in that the lever arm (8,77) is guided by three tracks (9,10,11) provided on the inside of the housing (2) where the
10 guidance comprises pins (12) arranged on the lever arm (8,77) perpendicular to the lever arm's longitudinal direction, and that said pins (12) engages the tracks (9,10,11) and preferably identical sets of tracks arranged symmetrically on either side of the lever arm; a first track or set of tracks (9) in front of the canister (6) which track is generally horizontal; a second track or set of tracks (10) provided in the yoke (15),
15 said track also being generally horizontal and a third track or set of tracks (11) arranged behind the canister (6) and said third track (11) comprises a generally straight upper section (13) and a curved lower section (14).

6. Device according to any of the claims 3 to 5, c h a r a c t e r i s e d in that the length
20 of the lever arm (8) is such that when the cap (3) is closed the free end of the lever arm (8) is flush with or contained within the housing (2), and when the cap (3) is opened the free end of the lever arm (8) will project from the housing (2).

7. Device according to any of the preceding claims, c h a r a c t e r i s e d in that the
25 lever arm (8,77) is a pivotal section of the housing (2) constituting at least part of a top surface of the device and that the lever arm (8,77) is pivotably fastened to the housing (2) in one end of said lever arm (8,77).

8. Device according to any preceding claim, c h a r a c t e r i s e d in that a dose counting
30 mechanism is arranged inside the housing (2), such that a member (44,54,80) optionally engaging the canister will be depressed together with depression of the lever arm (8), and that said member will transmit the depression to a dose counter for registration of a delivered dose, and that the dose counter mechanism comprises means

(30,31,72,74) visible on the housing for indicating the number of dispensed doses or number of remaining doses.

5 9. Device according to any proceeding claims, characterised in that a dose counter is provided, and that said dose counter comprises:

- indicating means (30,31) for indicating the available content in a canister (6), which means comprises one or more indicating wheels or rollers (30,31,72,74);
- a secondary lever arm (40,54) having means (55) for engaging at least one of the indicating wheels or rollers (30,31,72,74);
- 10 - a pivotable activating member which may be integral with the lever arm (8) comprising a first linear curve or circular section (50) translating into a second linear curve or circular section (51) translating into a third linear curve or circular section (52), arranged such that the secondary lever arm (40,54) will abut and slide on said sections (50,51,52) during a count.

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10. Device according to claim 8 or 9, characterised in that

- a groove (41) is arranged in a surface (42) of at least one of the wheels (43) at a distance from the rim, said groove (41) comprising spaced radial sections (48) connected with curved or linear sections (47) arranged such that a part of the
- 20 secondary lever arm (40) is inserted and slidably arranged in said groove (41);
- means (46) for urging at least one wheel to rotate.

11. Device according to claim 1 or 3, characterised in that the pivotably fastened lever arm (8,77) has an engagement point (78) which engages a yoke (79), which

25 yoke comprises a projecting member (80) which is adapted to engage a secondary lever arm having means for translating the movement of the projecting member (80) to a dose counting mechanism, where the engagement point (78) engages the yoke (79) on an upper surface (81,85,86,87) of said yoke.

30 12. Device according to claim 11, characterised in that the upper surface (81,85,86,87) of the yoke (79) is linear, such that the engagement point (78) transfers the movement of the pivotably mounted lever (77) in a linear movement to the yoke (79).

13. Device according to claim 11 or 12, characterised in that the upper surface of the yoke (79) is divided into two or more distinct linear or non-linear sections (85,86,87), where the lever arms engagement points' (78) travel along the second section (86) creates a substantial part of the yoke's (79) movement.

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14. Device according to any preceding claim comprising a mechanical return blocking arrangement where said blocking arrangement comprises two cooperating and mutually displaceable parts (92,95):

- 10 - a first part (95) wherein parallel to a longitudinal axis at least one set of tracks comprising a first track (102) and a second track is provided, and that the second track comprises one or more retaining members (97) and a sliding guide (101) arranged at one end of the second track;
 - 15 - a second cooperating part (92) wherein a leg member comprising an engagement section (94) for engagement with the tracks provided on the first part is provided, and that said leg member is biased towards the first part (95) and that the engagement section (54) is adapted to travel in the direction of the longitudinal axis;
- and further that the retaining members (97) allows the engagement section (54) of the leg member to move in a first direction towards the sliding guide (101) but blocks movement in the opposite second direction and that the engagement section (94) of the
- 20 leg member slides on the sliding guide (101), whereby the engagement section (54) and thereby the leg member is directed from the second track to the first track (102).

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15. A device according to claim 14, characterised in that in the blocking device each retaining member (97) comprises an inclined sliding surface (98) having a predetermined length along which the engagement section (94) will slide, and a step in the shape of a surface arranged at a sharp angle in relation to the sliding surface (98), said step connecting the top of one inclined sliding surface (98) and the bottom of the next sliding surface (98), such that a saw-tooth configuration is created, and such that the engagement section (54) of the leg will be retained from movement in one direction by said step.

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16. A device according to claim 14 or 15, characterised in that the inclined sliding surface (98) overlaps an adjacent inclined sliding surface, and that the inclined

sliding surface tapers perpendicular to the longitudinal axis such that the top is narrower than the bottom of the sliding surface, whereby the step at the bottom is narrower than the adjacent sliding surface at their connection point.